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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,262	06/29/2004	Ping-Chieh Kao	VIAP0105USA	4261

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EXAMINER
SINGH, HIRDEPAL

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
06/15/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/710,262	KAO ET AL.	
	Examiner	Art Unit	
	Hirdepal Singh	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 June 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

HA HS- a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This action is in response to the filing date of June 30, 2003. Claims 1-20 are pending and have been considered below.

Specification

1. The disclosure is objected to because of the following informalities: the examiner notes the use of acronyms (LAN, WLAN, DECT, GSM, WCDMA, OFDM, DSSS/CCK) in paragraph 0005 on page 2, and (ISM) in paragraph 0006, without including a description in plain text when they are used for the first time.

Appropriate correction is required.

Claim Objections

2. Claims 7, 8, 17, and 18 are objected to because of the following informalities: These claims use acronyms (GSM, WCDMA, OFDM, DSSS/CCK) without describing them when used for the first time in a claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 4, 5, 7, 9, 11, 14, 15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teo et al. (US 6,985,545) in view of Tsuie et al. (US 2004/0223449).

Claims 1, and 11: Teo discloses a method and wireless receiver apparatus capable of handling signals of different modes i.e. different air interface standards by same or common analog to digital converter to digitize the signals at a common rate (abstract) comprising;

a. receiving a radio frequency RF signal through antenna (abstract; column 6, lines 44-52; figure 1);

b. down converting the received RF signal to base band signal (column 6, lines 60-63);

c. converting the base band signal to digital signal with analog to digital converter with a data or sample or digitizing rate (column 2, lines 14-25; column 6, lines 55-67);

d. processing the digital signal in the signal handling device and adjusting the data rate as required, but doesn't explicitly disclose that the digital signal is processed according to first data rate to detect if the signal is in a first predetermined mode. However, Tsuie discloses a similar receiver and method capable of handling signals of different modes (abstract), and detecting the transmission mode of the received signal (paragraphs 0048-0049; figure 3). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to process the signal according to first data rate for detecting whether the digitized signal is in a first predetermined transmission mode. One would have been motivated to detect if the signal carries information of a predetermined first mode to avoid the data rate conversion, which would be necessary for one of the receiving modes, to reduces the complexity and cost of the receiving device;

e. Teo further discloses that the digitized signal is processed according to a second data rate i.e. down converted in the rate converter to detect the information of a second predetermined mode (column 2, lines 60-67-column3, lines 1-3).

Claims 4, and 14: Teo and Tsuie disclose a device and method for wirelessly receiving signals of different modes with common ADCs to digitize at a common rate as in claims 1 and 11 above, and Teo further discloses that the first data rate i.e. standard digital signal processing rate and basic data rate i.e. common digitizing rate are multiples, but doesn't explicitly disclose that the first data rate and basic data rate are same. However, it would have been obvious to one having ordinary skill in the art at the time the

invention was made that if the primary signal i.e. digitized signal has a data rate, which is according to Nyquist theorem, twice the highest bandwidth signal then the first data rate i.e. the data rate of the highest frequency is same as the sampled rate or primary rate.

Claims 5, and 15: Teo and Tsuie disclose a device and method for wirelessly receiving signals of different modes with common ADCs to digitize at a common rate as in claims 1 and 11 above, and Teo further discloses that the first data rate is a multiple of a standard rate i.e. basic sampling rate (column 4, lines 54-67).

Claims 7, and 17: Teo and Tsuie disclose a device and method for wirelessly receiving signals of different modes with common ADCs to digitize at a common rate as in claims 1, and 11 above, and Teo further discloses that the predetermined modes could be CDMA, TDMA, GSM (column 6, lines 10-16; column 8, lines 40-55), but doesn't specifically say that the modes are GSM-1800 and WCDMA. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make use of different modes as GSM-1800 and WCDMA for transmitting the signal. One would have been motivated to implement these modes to be used in the system to achieve high speed and to catch up with the next generation technology.

Claim 9: Teo and Tsuie disclose a device and method for wirelessly receiving signals of different modes with common ADCs to digitize at a common rate as in claim 1 above,

and Teo further discloses that sampling the signal at a first data rate which is a multiple of a standard rate i.e. basic sampling rate is a multiple of a first data rate (column 4, lines 54-67), but doesn't explicitly disclose that the basic data rate is multiple of lower between a first and a second data rate. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to sample the signal at a rate multiple of lower between the two data rates of different standards in order to avoid using an extra down converter in the receiver, and the signal with higher data rate is down converted via a rate converter when that signal mode is less prone to noise.

5. Claims 6, 8, 16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teo et al. (US 6,985,545) in view of Tsuie et al. (US 2004/0223449), and in further view of Womack et al. (US 5,982,819).

Claim 6: Teo and Tsuie disclose a device and method for wirelessly receiving signals of different modes with common ADCs to digitize at a common rate as in claim 1 above, but neither explicitly disclose that the primary signal is down converted when the first data rate is lower than the basic data rate. However, Womack discloses a similar system and method for wireless receiver capable of handling signals of different modes and the digital signal is processed and down converted to basic data rate in digital down converters (column 5, lines 22-51) it is inherent that the signal is down converted when the first data rate is lower than the basic data rate i.e. the signal is over sampled. Therefore, it would have been obvious to one having ordinary skill in the art at the time

the invention was made to process the signal according to first data rate and down converting to first data rate. One would have been motivated to use the Womack receiver down converter to bring the basic data rate to first data rate according to the predetermined mode.

Claim 16: Teo and Tsuie disclose a device and method for wirelessly receiving signals of different modes with common ADCs to digitize at a common rate as in claim 11 above, but neither explicitly disclose that the primary signal is down converted when the second data rate is lower than the first data rate. However, Womack discloses a similar system and method for wireless receiver capable of handling signals of different modes and the digital signal is processed and down converted to basic data rate in digital down converters (column 5, lines 22-51). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to down convert the signal to the first data rate when second data rate is lower than the first data rate as the digitized signal is multiple of the lower data rate, and required to be down converted via a rate converter to the higher data rate mode. One would have been motivated to use the Womack receiver down converter to bring the basic data rate in Teo system to first data rate i.e. the higher data rate according to the predetermined mode.

Claims 8, and 18: Teo and Tsuie disclose a device and method for wirelessly receiving signals of different modes with common ADCs to digitize at a common rate as in claims 1, and 11 above, and Tsuie further discloses that the predetermined modes could be

orthogonal frequency division multiplexing OFDM (abstract; paragraph 0057), but neither specifically disclose that the mode could be direct sequence spread spectrum DSSS. However, Womack discloses a similar system and method for wireless receiver capable of handling signals of different modes, and further discloses that the modes or formats could be frequency shift keyed FSK or direct sequence spread spectrum DSSS (column 2, lines 25-40). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make use of different modes as direct sequence spread spectrum DSSS/CCK, orthogonal frequency division multiplexing OFDM for transmitting the signal. One would have been motivated to implement these modes to be used in the Teo system to achieve high speed and to catch up with the users of the next generation technology.

Claim 19: Teo and Tsuie disclose a device and method for wirelessly receiving signals of different modes with common ADCs to digitize at a common rate as in claim 11 above, but neither specifically disclose that the rate converter i.e. digital down converter is a farrow interpolator or a Decimation filter. However, Womack discloses a similar system and method for wireless receiver capable of handling signals of different modes, and further discloses that the digital down converter i.e. rate converter is a decimation filter (column 5, lines 25-40). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the decimation filter as a rate converter in the Teo system. One would have been motivated to

implement the decimation filter rate converter to decimate the data rate down to the predetermined mode.

6. Claims 2, 3, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teo et al. (US 6,985,545) in view of Tsuie et al. (US 2004/0223449), and further in view of Karaoguz (US 2004/0029620).

Claims 2, 3, and 12: Teo, and Tsuie disclose a device and method for wirelessly receiving signals of different modes with common ADCs to digitize at a common rate as in claims 1 and 11 above, but neither explicitly disclose a power control module for switching one base band processing modules into a power saving mode when other base band processing module detects that the primary signal is in corresponding predetermined mode. However, Karaoguz discloses a similar method and device receiving signals of different communication standards or modes (abstract; paragraph 0005), and further discloses a power control module temporarily switching base band processing module to power up and power down modes (figures 2, 6; paragraph 0043). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the power control module for temporarily switching one of the base band processing modules to power saving mode corresponding to the primary signal's predetermined mode. One would have been motivated to combine the power control module in Teo system in order to extend the battery life and get better power management for the RF receiver.

Claim 13: Teo, Tsuie, and Karaoguz disclose a device and method for wirelessly receiving signals of different modes with common ADCs to digitize at a common rate as in claim 12 above, and Karaoguz further discloses power up the elements of radio receiver for known communication periods (abstract; paragraph 0011). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the power control module for switching the base band processing modules back up to full power mode corresponding to the transmission procedures. One would have been motivated to use the power control module in Teo system to pput base band processing modules back up in full power mode corresponding to the transmission procedures in order to enable the receiver to engage in communication, and get better power management.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Teo et al. (US 6,985,545) in view of Tsuie et al. (US 2004/0223449), and further in view of Spiegel et al. (US 7,161,997).

Claim 10: Teo, and Tsuie disclose a device and method for wirelessly receiving signals of different modes with common ADCs to digitize at a common rate as in claim 1 above, but neither explicitly disclose that the primary digital signal is subject to adjacent channel interference filtering. However, Spiegel discloses a similar method and apparatus for programming base band module, and further discloses a low pass filter to

reject adjacent channel interference (abstract; figures 1, and 3; column 1, lines 25-32; column 4, lines 35-40). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the adjacent channel interference filter. One would have been motivated to combine the adjacent channel interference filter in Teo system in order to reject the interference which is generated when switching between different receiving modes.

8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Teo et al. (US 6,985,545) in view of Tsuie et al. (US 2004/0223449), in view of Womack et al. (US 5,982,819), and further in view of Li et al. (US 7,200,196).

Claim 20: Teo, Tsuie, and Womack disclose a device and method for wirelessly receiving signals of different modes with common ADCs to digitize at a common rate as in claim 19 above, but neither explicitly disclose that the base band processing module comprises a Farrow interpolator. However, Li discloses a method and apparatus for interpolation based timing recovery, and further discloses a Farrow interpolator for timing recovery (abstract; figures 1, 4, and 6; column 1, lines 25-32; column 4, lines 50-66; column 5, lines 1-50). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the Farrow interpolator in the Teo system. One would have been motivated to combine the Farrow interpolator for compensating the timing offsets.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hirdepal Singh whose telephone number is 571-270-1688. The examiner can normally be reached on Mon-Fri (Alternate Friday Off)8:00AM-5:00PMEST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HS
June 8, 2007

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER

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